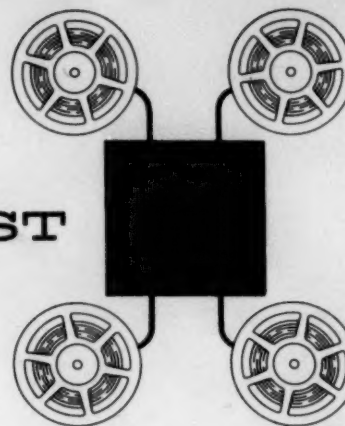


# DATA PROCESSING DIGEST

1140 South Robertson Blvd., Los Angeles 35, California

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VOLUME 6 NUMBER 12

DECEMBER, 1960

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## Equipment

### OPTICAL SCANNING—AN UNLIMITED HORIZON

MANAGEMENT AND BUSINESS AUTOMATION, September 1960; pages 23-29, 58

Optical scanning offers a possible solution to automatic re-entry to an EDP system through the "turn-around documents" such as a utility bill stub, or the cash register tape in a retail store. Farrington, IBM, GE, RCA, and NCR are among the equipment manufacturers who are active in this field. The National Data Processing Co., Dallas, has announced plans to install a system called the NDP Readatron in a large southern department store this year. Addressograph-Multigraph has an optical code scanner which operates on a "bar-code" principle, in which the scanner reads the codes which are printed above the characters rather than reading the actual character. The system has been introduced into the oil industry, and will be promoted in the retail industry where the Addressograph plastic credit card would be the key to the system input.

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Farrington is on top at present with 29 scanners in 15 firms. Among these are First National City Bank of New York, processing travelers' checks; National Biscuit Co., converting sales reports to cards; Reader's Digest, processing book club records; American Tel and Tel, processing dividend checks and stockholders records; Ohio Bell Telephone, Arizona Public Service Co., and Atlantic City Electric Co., all doing a cash accounting job.

The key to any effective character sensing system is its ability to cope with quality variations in the printing. "The critical tolerances involved in the ink formula for MICR printing, the lack of inexpensive imprinters and inscribers, the present inability to create turn around documents on high speed equipment and the lack of an alphabetic type font, are... stumbling blocks which prohibit the widespread use of magnetic ink character recognition systems for general business use." Probably the primary objection to MICR is the inability of ordinary accounting machines, cash registers, typewriters, and other office machines to imprint with required quality.

*There's more than one  
way to scan a code*

This is the crux of the problem for the retail industry. Among the companies developing type fonts for character sensing in retail situations are Farrington, General Electric, National Cash Register, and RCA. "Unfortunately the various type fonts will probably bring about an early crisis in the optical scanning industry, unless some effort is made to have all systems compatible to the various typefaces." This is the problem as seen by the chairman of the Optical Standards Committee of the NRMA's Retail Research Institute. GE's font is designed "as an optimum numeral font which will tolerate a large amount of printing deterioration and still be readable by humans and machines." NCR's scanner "must read figures printed by their conventional cash registers, accounting and adding machines. Their approach: Determine the print quality that can be reasonably achieved and then design and build a reader capable of reading this print." RCA has developed a "5 x 7" font which has characters very similar to ordinary gothic type. The Farrington system uses "stroke analysis" to establish a truth table. This is a key to Farrington's success, since the table is extremely easy to represent by computer logic circuitry.

## General Information

### A BANK TURNS TO AUTOMATION

John A. Cost, Fidelity-Philadelphia Trust Co., Philadelphia, Pa.  
JOURNAL OF MACHINE ACCOUNTING, October 1960; pages 22-27

The Fidelity-Philadelphia Trust Co. installed an RCA 501 early in 1960. The planning stage covered two and a half years, and resulted in a three-phase plan for full conversion to EDP. The first project selected for the computer was demand deposit accounting, since it was found that this application would "provide an immediate self-liquidating basis for our automation program." In the first phase, punched paper tape is being used. In the second phase magnetic ink imprinting of source documents by the bank, further savings will be realized. In the third phase of the program, a fully automated input will be possible when all banks are using the MICR system.

*Careful preparation of  
personnel*

Careful education and relocation of personnel has resulted in a smooth transition. "Excess personnel are being transferred to a pool until normal attrition through turnover balances personnel and requirements." Personnel for the core of the EDP Division came from the electronic research and development group. Others were selected from tests conducted by an outside testing group. They include a trust department supervisor, an auditor, a tax accountant, a tab supervisor, and a systems and methods man. In the new organization they are analyst-programmers, and have the additional responsibility of supervising and training subsequent additions to the Division.



A representative of the Auditing Department was sent to programming school and then worked with the EDP staff in providing for audit trails. A bank-wide educational program for the other employees was provided most of the year preceding the installation.

The bank expects to convert its large volume applications to EDP over a period of three to five years. After the demand deposit application, the program will be extended to personal loan accounting, trust accounting, commercial and mortgage loan accounting, savings accounting, and new areas of customer service.

### **MANAGEMENT ORGANIZATION AND THE COMPUTER**

*Edited by George P. Schultz and Thomas L. Whisler, University of Chicago*

*Published by Graduate School of Business, University of Chicago, 1960. \$7.50*

This volume comprises the proceedings of a McKinsey Foundation Seminar, part of a series on Studies in Business. It is concerned with the changing characteristics of management with the introduction of the electronic computer into business. Eleven papers were discussed in a two and one half day seminar. The papers discuss various aspects of "a new kind of technological change--the processing of business information." The purpose of the seminar was to "assess the nature of this change and its significance for the group of workers most directly affected--business managers." The experiences of a number of companies which have introduced EDP into their organizations were related and discussed. These companies included: Standard Oil of New Jersey, United Air Lines, General Electric, The Atwood Vacuum Machine Company, and The International Shoe Company.

The papers and the transcript of the discussions appear to have achieved their purpose well. They do provide an interesting insight into the problems of introducing a computer into a business organization, particularly in the area of computer use for decision-making.

### **AUTOMATION—WITH NO CAPITAL OUTLAY**

*James Rush James, Jr., Clayton Bank, Clayton, Missouri*  
*BANKING, October 1960; pages 54, 118*

Three new banks in the St. Louis area are making use of a local service center to process their demand deposit accounting function. After proofing and batching the day's items, they are card punched and the cards are sent to the service bureau at 5:30 PM, and processed during the night. The next morning the bank receives a daily trial balance for all checking accounts, an overdraft listing, stop payment register, and a list of accounts whose balance has turned to zero. The latter is turned over to new-business men who investigate the reason for the apparent closing of the account.

At the end of each statement cycle, the computer automatically computes the service charge and prepares the statements for the banks. It is planned to follow the present procedures with the processing of savings accounts, installment loans, and real estate mortgages.

### **MICR UNDER THE MICROSCOPE**

Robert L. Eger, Lithographers & Printers National Association  
AUDITGRAM, October 1960; pages 4-7

Bank stationers have questioned the necessity for stringent specifications of MICR printing when they have seen demonstrations of accurate reading of mutilated checks. The answers given by the manufacturers of the equipment are:

1. Exact specifications must be set forth for encoding before office equipment manufacturers can even attempt to build machines to read it. The specifications are something to shoot for, at the same time, a measure of attainment.
2. In public use--billfolds, pocketbooks, etc.--there will be accidental mutilation. That makes it all the more important that encoding be up to a standard when the checks leave the printer. It lowers the rejection rate for ordinary use and abuse.
3. The quality of encoding that different machines require for reading varies with the machine. In this respect the specifications are protection for the printers.

Printers are working with tolerances as fine as ten-thousandths of an inch, testing their output with oscilloscopes and magnifying glasses that enlarge the magnetic ink characters and symbols 50 times.

### **INTERNAL AUDITING AND E.D.P.**

AMERICAN GAS ASSOCIATION MONTHLY, October 1960; pages 21, 22, 29

Auditors in utilities companies planning large scale EDP installations, have assigned personnel to the programing staffs in order that proper auditing requirements are met during this phase. It would be very costly to wait until a program has been written before examining it for auditing requirements. Experience at Commonwealth Edison has shown that adoption of a computer system has increased the need for higher caliber audit personnel, since the audit staff must evaluate the propriety and accuracy of input and output data and to some degree appraise clerical performance in applicable departments. It is believed the auditor should, as a minimum, participate in the development of the program as follows:

1. He should at least have some general knowledge of the operation of the hardware of the computer which is to be utilized to the extent that he knows its general functions and its capabilities.

2. He should be or become familiar with the present system applicable to an activity and be thoroughly informed about the framework upon which the proposed computer program is to be developed.

3. He should have a complete understanding of the control measures incorporated in the program and the hardware.

### **AUDIT CONTROL WITH AUTOMATION**

William E. Bell, Jr., Arthur Andersen & Co., New Orleans, La.  
AUDITGRAM, October 1960; pages 10, 11

The auditor must advise management of the need for tightening controls when his company goes into an electronic data processing system. New programs may be tested by using a test deck that represents various valid and erroneous assumptions. This test will correspond to the audit tests normally made. In addition, during the running of a program, the auditor may require that all console interventions be recorded on the console typewriter and filed as a log of operations. It is unlikely that either the programmer or the operator could falsify the records sufficiently to carry out fraud, because of the highly complex nature of a program, and the checking and cross checking possible during data preparation. It is likely that the auditor will be more concerned with an examination of procedures rather than the examination of detailed data as in a manual system.

### **ELECTRONIC DIGITAL COMPUTER INSTALLATIONS IN NAVY**

Dept. of the Navy, Navy Management Office, Washington, D.C.

This report reviews the six stages of office automation in the Navy, looking back at the four stages from 1940 to 1960, and ahead at stages 5 and 6, over the next ten years. The review of the past reveals that experience has been gained in using computers, the reliability of the machines has been proved, and in some outstanding cases, important new work is being performed on them. By 1970 it is anticipated that Navy will have an over-all scientific management framework and information system, with a general replacement of equipment, and full management exploitation of the integrated information system concept. For a copy of the report, write to the Navy Management Office and ask for NAVEXOS P-2256.



## OFFICIAL PLANS FOR CHANGES IN RUSSIAN ACCOUNTING ACTIVITIES

Paul Kircher and George Ginsburgs, University of California, Los Angeles

Russian accounting has been, until recently, comparatively neglected by the Central Administration. The result has been a startling increase in physical output, but sometimes at high cost. Recently the trend has been toward greater emphasis on the recording, processing and reporting of financial information, since it was discovered that too often goals were set unrealistically high, and reports were falsified in an effort to avoid the blame for not meeting them.

In the March 1960 issue of "Bukhgalterskii Uchet," an official voice of the Ministry of Finance, an editorial appeared from which the following paraphrased abstract is taken (translation by UCLA Russian Accounting Project):

*Is gaining on West by  
rejecting abacus*

Improvement of administrative functions must include accounting and the newest methods of calculating. The great number of accounting and bookkeeping personnel at present is caused by the low level of mechanization. In September 1958 the number of bookkeeping personnel in industrial organizations was more than 1,650,000, of whom only 47,000 worked with calculating machines. In addition, 360,000 were engaged in accounting activities on collective farms. Russia's output of punch card machines during 1958 filled only 20% of the orders for them. Few punch card machines are Russian-made, and computer production is unorganized.

Official goals for development of USSR economy in 1959-1965 include an increase of 4-1/2 times the 1958 level for the production of computing machines. These plans include 88,000 adding ten-key one-register machines, 21,000 adding ten-key machines with multiple registers, 109,000 calculating keyboard machines, 12,800 mailing machines and 1,700 accounting machine systems (including electronic).

In addition, repair parts and local repair stations are planned for this large scale project. Directives from above will order the mechanization of accounting and the introduction of appropriate systems for using the new machines. At present there are 167 machine-calculating stations for centralized accounting. These will be increased and placed on an economic basis. Beginning in 1960, the Moscow Economic-Statistical Institute will begin training people in the use, maintenance, production and design of computing machines. In addition, the Central Statistical Agency of the USSR is ordered to establish procedures, systems, wages, etc. in the entire field of mechanized accounting and reporting. "It is a matter of honor for the workers in accounting to ensure that successes in the perfection of accounting, and its mechanization, measure up to the level of technical progress in production."

For a copy of this paper, write to the authors, care of School of Business Administration, University of California, Los Angeles 24, California

## **EXPERIENCES WITH THE INTRODUCTION OF OFFICE AUTOMATION**

*MONTHLY LABOR REVIEW, April 1960; pages 376-380*

The Bureau of Labor Statistics studied 20 offices which were the home or central offices of some of the largest corporations in the U.S. The purpose of the study was to see what effect the installation of an electronic data processing system had upon the employees.

It was found that during the average three years of the installation process many of the offices took advantage of the time to inform employees about the change and make explicit their policies about job security. In seven offices with collective bargaining relationships, the union was the information channel. Among the total of 2800 employees among the companies, who were affected in some way by the computer, about one-third had been reassigned to other positions. Almost one-sixth had quit, retired, died, or taken a leave of absence. Nine persons had been laid off. The original work unit was reduced by about 25 percent. The group whose work was placed on the computer represented, on the average, about 5 percent of the total office employment.

More than 80 percent of the employees in new jobs created by the EDP systems were selected from within the offices. Older employees were less affected by change in job status than younger workers, but they were not promoted to the new jobs to the same extent. Their educational qualifications, employers' opinions, and pre-existing hiring practices, as well as their own lack of confidence in their learning capacity, were factors retarding their advancement.

### **COMPUTER AUTOMATION, WORK ENVIRONMENT, AND EMPLOYEE SATISFACTION: A CASE STUDY**

*Einar Hardin, Labor and Industrial Relations Center, Michigan State U.*

Using statistics gathered by researchers in the Labor and Industrial Relations Center, Michigan State University, the author compared the work changes and attitudes in several departments of an insurance company, one which was directly affected by the installation of a computer, and one which was not. His conclusions were that by and large, changes brought about by the installation of EDP equipment in work environment and job satisfaction are very similar to those which occur normally. For a copy of the study, write to Labor and Industrial Relations Center, Michigan State University, East Lansing, Michigan.

## CREATIVITY TESTS ARE HELPFUL

Alvin L. Simberg, AC Spark Plug Div. and Dr. Richard H. Harris,  
General Motors Corp.  
PRODUCT ENGINEERING, October 17, 1960; pages 73-75

((This article is included in DPD only because it suggests a possibility for tests in selecting top notch programmers and systems personnel.))

The AC Test of Creative Ability is based on the observation that creativity is not necessarily based on IQ. The authors of the test say they have made studies which "proved that the AC test can reliably differentiate individuals considered creative by their supervisors from those who are not." The test was designed "as an indicator of a person's ability to produce a number of unique ideas for a given situation in a given amount of time." The measure of creativity is not an absolute, but "a relative ranking of the individual in his own company group."

The test consists of five questions, each of which tax the imagination of the person taking the test. For example, "list all the things you think are going with, or could be improved upon, in a wrist watch." Each of five questions is a test of a different aspect of creativity. Scores are based on quantity (number of reasons or suggestions given) for three of the questions, uniqueness in four of the questions, and quality in one question. Answers given infrequently get more points than common answers. Quality is measured against a scale set by a panel of judges.

The Industrial Relations Center, University of Chicago, has been authorized to make the test available to interested users.



## Systems Design

### PROBLEMS IN THE APPLICATION OF A COMPUTER TO WHOLESALE WAREHOUSE AND RETAIL BRANCH CONTROL

J. W. Mitchell

THE COMPUTER BULLETIN, September 1960; pages 41-43

The analyst who is charged with investigating present systems and designing new ones for a computer installation should realize some sad but true facts: "...you will always find at least three methods in existence--the method authorized by Management, the method employees think they use and, finally, the method actually employed." Worse, after the survey is completed, "you have all the information about what the staff wish you to think necessary--an entirely different matter from what actually prevails...."

For example, in a recent investigation, "all information pointed to the fact that the majority of ex-warehouse sales were made at the catalogue selling price, [except for a few cases]. Everybody agreed that no more than 5% of sales were at special prices." Accordingly, it was decided to set up the system so that these special sales would be rejected from the automatic invoicing procedure as exceptions to be handled manually. When the system began, however, 95% of the sales proved to be made at special prices. The salesmen had concealed this fact, and the clerks had aided by not bothering to check prices on order slips against the catalog!

"It is almost inevitable that small points will be overlooked when a system is planned, and it is indeed a wise man who knows his own business."

## **Management Sciences**

### **A PROGRESS REPORT ON MACHINE INTELLIGENCE**

Daniel D. McCracken, Consultant, Ossining, New York  
DATAMATION, September-October 1960; pages 10-13

Workers in the field of machine intelligence generally are working toward one of three goals: 1) the nature of problem-solving and learning; 2) finding new ways to use computers; and 3) attacking certain important problems in decision-making. The work has included Dr. Samuel's checker-playing programs, RAND's chess games, attempts to prove theorems in elementary symbolic logic, and heuristic approaches to problem-solving (that is, a procedure which may solve a given problem, but offers no guarantee of doing so; contrasted with an algorithm). Although this is an important field of research, particularly for future higher uses of computers, there are probably not more than 100 persons engaged in such research.

### **BANK MANAGEMENT SIMULATION**

JOURNAL OF MACHINE ACCOUNTING, October 1960; pages 32, 33

A bank management game developed by McKinsey & Co. has been played by officers of Mellon National Bank and Trust Co., using the bank's IBM 650 to process the simulated eight quarters of banking operations. The game session was followed by a two-hour discussion period on the outcome of the game. The three-man "banks" did not compete against each other, but against the economy "built into" the computer. ((See also: DPD, October 1960, page 21, "Your Wits v. the Computer's"))

# Programing

## A NOTE ON THE APPLICATION OF GRAPH THEORY TO DIGITAL COMPUTER PROGRAMMING

Richard M. Karp, IBM Research Center, Yorktown Heights, New York  
INFORMATION AND CONTROL, No. 3, 1960; pages 179-190

The use of such terms as "loops," and "pattern of control" in programing indicates an awareness of the relevance to programing of the concepts of graph theory. There is a need for a systematic study of the application of graph theory to digital computer programing. A model suitable for such a study is described in this paper.

The flowchart is used to represent an algorithm of the problem. It consists of an arrangement of elements connected by directed arcs. The elements are of two types: operational and decision. The model is not capable of describing flowcharts which modify their own structures.

*Flowchart to graph to matrix*

"Given a program written either in machine language or in the source language of an automatic programming system, one can perform a segmentation into operational elements and decision elements, provided that the program does not modify its own transfer-of-control instructions. An operational element corresponds to a sequence of instructions uninterrupted by a conditional transfer of control, and a decision element corresponds to a conditional transfer-of-control instruction. . . . Corresponding to any given flowchart one can construct a directed linear graph, with a node corresponding to each decision element, initial or terminal operational element, or to any point at which two arrowhead meet in the flowchart."

A connection matrix may be derived from the graph. This matrix is more suitable than the graph for formal manipulation. The remainder of the paper explains the method by which the matrix may be used for combining programs or for extracting a portion from a composite program for a single procedure.



## **A COMMON LANGUAGE TO PROGRAM COMPUTERS FOR BUSINESS PROBLEMS— SECOND REPORT**

Charles A. Phillips, Office of Ass't. Sec'y of Defense, Washington, D.C.  
COMPUTERS AND AUTOMATION, October 1960; pages 6-8

This is a progress report on CODASYL (Conference on Data Systems Languages), the cooperative committee of manufacturers and users on common problem-oriented languages. With the development of the short range language, COBOL, a Maintenance Committee has been set up to improve COBOL. A Development Committee has been formed from the original Intermediate and Long-Range Planning Groups to "continue the promotion and conduct of research into the more advanced aspects of communications between men and machines, and to develop a systems-oriented, computer-independent language for the expression of business problems in procedural form." A Development Advisory Board composed of representatives of computer user organizations and university researchers in this field will assist the Development Committee.

## **Applications**

### **PURCHASE ORDERS TYPED AUTOMATICALLY**

H. G. Johnstin, Jr. and C. A. Pursley, Westinghouse Electric Corp.  
PURCHASING, October 10, 1960; pages 80-84

At Westinghouse's Transformer Division in Sharon, Pa., purchase orders are being typed automatically as an offshoot of the inventory control system. The automatic system covers 8500 of the 10,000 items purchased. Five days of lead time have been eliminated from the order processing cycle, reducing the amount of protective stock needed, lowering the inventory level, and providing more flexibility in controlling stock-outs.

Economic Order Quantities (EOQ's) are held on tape, matched with corresponding supplier information for that particular account, and printed as a completed purchase order. The order is mailed directly to the supplier with no manual review. The computer makes some judgments:

*Computer won't buy unless  
the price is right*

1. It will not order unreasonable quantities that conflict with standard packaging or minimum tonnage requirements.
2. It calculates shipping dates based on a five-day week, and observes calendar variations over the years.
3. As many as six quantity-price breaks per account are observed.

4. The computer recognizes in-plant orders and engineering holds, and does not generate purchase orders for them, but generates a message about them.

An order information card is produced along with the purchase order, which is fed into the next inventory run and shows up on the account as material on order. Finally, the computer produces an updated supplier tape for the day.

The present system has two disadvantages: 1) There is only one supplier for each account. To order from another vendor it is necessary to enter a new account on the supplier tape. Future plans call for an automatic means of alternating vendors. 2) No correlation is made to place several items ordered from the same supplier on one purchase order, but this will be overcome through performing an additional sort.

The program is being run three days each week at a run and print cost of 13 cents per purchase order. Monthly average number of orders has been 1320.

## **ROCKETS, BUDGETS AND EDP**

*MANAGEMENT AND BUSINESS AUTOMATION, October 1960; pages 19-22, 42, 43*

Rocketdyne Division of North American Aviation is linked to the main plant 39 miles away with microwave equipment, tied in with the company's seven large computers. This giant network of information processing equipment has enabled the company to reduce the cost of Thor and Atlas engines by 37 percent, an estimated \$27 million. As an example, the program called "Allocations for Budgetary Control" uses a computer and a cathode ray tube to produce monthly graphs on 200 projects to inform Rocketdyne management at a glance where costs are out of step with the budget. The Mechanized Production Control program has saved an estimated \$50,000 a month. The Model Parts List is closely related to this program. The MPL is a master list of every item needed to build a specific rocket engine. Trained specialists prepare lists of parts needed from the engineering drawings and the computer master file maintains the records on the parts as long as they are needed. If a part should fail, the computer can print out which models in the plant are using the weak part.

The size of North American's operation is shown by the size of the EDP staff--200 persons. An average of 200 miles of magnetic tape is processed by the department each day. The "open shop" approach is credited with the success of the information processing network. At Rocketdyne, 400 engineers can write scientific programs for the 709's through the use of FORTRAN. ((See also: DPD, October 1960, page 14, "Centralized Record Keeping for Decentralized Operations..."))

## GENERAL COMPUTERS VIE FOR PLANT CONTROL

CHEMICAL WEEK, October 22, 1960; pages 31-34

Standard Oil of Indiana is using its IBM 704, not only for scientific and business calculations, but also for process control, through the use of three specially designed units which convert process signals into digital form for the computer. The process control time sandwiches into the other processing duties of the computer, and the system has proved to be more economic used in this manner than would be the purchase of a special process control computer.

## Points of Interest

RCA has developed Signaguard, a scrambling device which makes it virtually impossible to forge passbook signatures in the withdrawal of savings bank deposits. It also reduces customer time at the teller's window. The device reproduces a passbook signature as an unrecognizable mass of broken lines. When the passbook is presented, the device restores the signature to its original appearance for comparison with the customer's signature on his withdrawal slip.

The Instrumentation Laboratory at M. I. T. will install a Honeywell 800 EDP system.

Remington Rand Univac has published a 24-page glossary of programing and systems design terms which appears to be a handy reference for both the student and the curious layman.

A self-teaching manual for the Bendix G-15 ALGO compiler is available from the Bendix computer Division, Los Angeles 45, Calif. The 32-page manual describes ALGOL, the international algebraic language, and gives the procedures for representing numerical data and control statements.

The London Times of October 4, 1960 presented a supplement on Computers in Commerce. It included some interesting historical descriptions and pictures of early machines, as well as an explanation of the way in which computers are used in business, the characteristics of magnetic tape, peripheral equipment, and solid-state components, and the concept of integrated data processing. The feature is well-presented for public understanding.

Doubleday's first TutorText (see DPD, Oct. 1960, page 1) became available on November 1. The first volume is "The Arithmetic of Computers," by Norman A. Crowder. This is a new approach to teaching by means of the printed word. Worth looking into. \$3.95.



NCR has announced its Class 315 EDP system, a solid-state, low-cost computer which may be expanded from the basic system to a large system through a choice of memories and peripheral equipment. The five different memory sizes can store from 6000 to 120,000 decimal digits. One to eight magnetic tape files may be accommodated. The input equipment may include up to four magnetic character sorter-readers, a punched card reader, and paper tape reader. Output equipment may include up to four high-speed line printers and card punches, and a paper tape punch. The system will rent for \$7000 to \$9000 per month.

## Comment

### ANOTHER WORD ON HOME STUDY COURSES

Last month we discussed Home Study Courses, and gave some suggestions for the careful selection of such courses in programming. This month we mention specific courses which we feel may be successfully used by the individual student.

As we indicated last month, there is a dearth of good home study courses in the EDP field. However, what the field lacks in quantity it makes up in quality. The computer courses that we find presently offered are from highly regarded organizations.

*Two of top quality*

One of these is the well-known International Correspondence Schools. We have not had the opportunity of seeing the actual study materials. However, I. C. S. has an excellent reputation and is a member of the National Home Study Council (one of the criteria for selection which we included last month). The I. C. S. course is titled "Programming for Digital Computers," and is based on the outstanding text, "Digital Computer Programming," by D. D. McCracken. The course includes a review of business economics, some mathematics, office systems, and computer programming.

The other organization we want to mention is Business Electronics Inc. of San Francisco. This organization has been in existence four and a half years, and during that time has offered consistently high-quality courses in basic understanding of EDP as well as a recently designed course on the use of the IBM 1401. Business Electronics has developed several plans by which an organization can enroll groups of employees in the correspondence courses within the framework of the employee's job. These plans have been successfully used by management and operating people alike during the planning, designing, and conversion phases of their EDP installation. Other courses will be developed as the need appears. Business Electronics is also a member of the National Home Study Council.

An interesting home study course in the field of systems has recently appeared on the scene. The name of the originator, Les Matthies, is so well known and highly respected in his field, that it, alone, speaks for the quality of the course. The name of the course is "The Professional Systems Course: A Systemation Seminar," published by the Ross-Martin Company.

*How to learn the  
systems game*

We have received a sample lesson of this course, and find it carefully worked out in the vivid style characteristic of Mr. Matthies' Systemation newsletters. The first lesson in the Orientation series explains the purpose and form of the course. The course "provides a panoramic view of the entire field of systems work... a balance of concept, view-point, attitude, theory, and of techniques and mechanics." It consists of "250 bite-sized study units" of which the student will complete five each week for fifty weeks. The course covers 17 different subjects about systems work. Each unit includes a Shop Talk section which is filed in a 2-volume binder, making a complete systems handbook at the conclusion of the course. The explanation given in the first lesson on the use and distribution of the various pages, outlines, worksheets, sealed answer envelopes, etc. in each unit, reveals that the course has been cleverly designed to teach good systems practice through its own use!

The course has been designed for use in-plant by operating personnel who need to be trained in an understanding of systems work. However, the format seems to be adaptable for use by the individual student who wishes to study systems work on his own.

*A school away from school*

The way in which the programming courses of Business Electronics Inc. and the Systemation course published by Ross-Martin Co. are being used by businesses suggests that educational techniques may develop along some new and interesting lines. A combination of self-study and classroom organization, using standardized detailed teaching materials, gives the instructor more time to deal with individual problems and requires little or no preparation of study plans. Organizations which do not feel they are able to maintain a full-scale training program can take advantage of such courses within their present set-up, and get faster and more concentrated training for their employees than they can get through sending them to a formal university or college course.

**REFERENCES:**

International Correspondence Schools, Scranton 15, Pennsylvania  
Business Electronics, Inc., 420 Market Street, San Francisco 11,  
California (See DPD: August 1956, page 16)  
Ross-Martin Co., Box 800, Tulsa, Oklahoma

## Training

Engineering and Management Course, presented by University of California at Los Angeles

Date: January 23--February 2, 1961.  
Place: UCLA Campus  
Fee: \$450  
Information: Reno R. Cole, Coordinator, The Engineering and Management Course, College of Engineering, University of California, Los Angeles 24, California

Engineering Executive Program, presented by University of California at Los Angeles

Date: Beginning September, 1961  
Place: University of California at Los Angeles, California  
Fee: \$350 for each semester  
Requirements: Applicants must meet the acceptance standards of the Graduate Division of UCLA, and must have at least 5 years full time industrial experience.  
Program: Four semesters, late afternoon and evening, one day per week. Course includes methods of operations research, relationship of industry to the community, group behavior, analysis of specific industrial projects. Course leads to a Master's Degree in Engineering.  
Deadline: Applications must be submitted by March 1, 1961  
Information: The Engineering Executive Program, Dept. of Engineering, Room 4173C Engineering Bldg. Unit I, University of California, Los Angeles 24, California

## Meetings

Eastern Joint Computer Conference

Date: December 13-15, 1960  
Place: New York City (Hotel New Yorker and the Manhattan Center)

Association for Computing Machinery National Conference

Date: September 6-8, 1961  
Place: Los Angeles, California (Statler-Hilton Hotel)  
Information: A. C. M. 1961 National Conference, P. O. Box 1437, Santa Monica, California



## References

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Chemical Week  
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New York 36, New York

The Computer Bulletin  
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Datamation  
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Academic Press  
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DATA PROCESSING DIGEST is published each month by Canning, Sisson and Associates, Inc., 1140 South Robertson Boulevard, Los Angeles 35, California. Subscription rate: \$24.00 per year. Foreign postage (exclusive of Canada and Mexico): \$2.50 additional. Single copies: \$3.00 when available. Executive Editors: Richard G. Canning and Roger L. Sisson. Managing Editor: Margaret Milligan